



National Aeronautics and
Space Administration
Langley Research Center

News Researcher

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Langley Lands H&RT Proposals Center Awarded \$69.8 Million For Exploration Systems Work

By **MICHAEL BRAUKUS**
NASA Headquarters

NASA's Office of Exploration Systems has selected the proposals of 50 NASA investigators from its 10 field centers to support the human and robotic technology goals and objectives of the Vision for Space Exploration. Total value of the work is approximately \$570 million through fiscal year 2008.

Langley Research Center had eight proposals selected with a total value of more than \$69.8 million.

"The Office of Exploration Systems was created to assist the agency in achieving its new strategic direction of establishing human and robotic space exploration as its primary goal," said NASA Associate Administrator Craig E. Steidle. "The selection of these investiga-

tors and the technologies they have proposed will help NASA meet the challenging goals and objectives of leaving low-Earth orbit and returning to the moon and then Mars. These technologies may also benefit our lives on Earth much like the Apollo missions led to the development of medical diagnostic tools such as the CT scan."

The selection was made in response to an intramural call for proposals and is the first of several steps towards developing new partnerships among NASA, industry and academia.

The Human and Robotic Technology (H&RT) investment portfolio resulting from these partnerships will have a positive effect on future exploration missions. The selected proposals support the fol-

■ **Langley Selected For Radiation Research Proposal, Page 3.**

lowing H&RT programs: Advanced Space Technology Program, Technology Maturation Program, and Innovative Technology Transfer Partnerships Program.

The selected proposals from Langley were:

■ "Accommodations for In-STEP Exposure Experiments on ISS," submitted by William H. Kinard, \$3 million

■ "Advanced Materials and Structures for the Modular Assembly of Large Space Platforms," submitted by Collins, \$15 million

■ "Analysis of In-Space Assembly of Modular Systems," submitted by Robert W. Moses, \$4.8 million

■ "Flexible Fabrics with High Thermal Conductivity for Advanced

Spacesuits," submitted by John W. Connell, \$14.7 million

■ "Joint Technical Architecture for Robotic Systems," submitted by Arthur T. Bradley, \$5.8 million

■ "Reconfigurable Scalable Computing for Space Applications," submitted by Robert F. Hodson, \$14.7 million

■ "Revolutionary Aerospace Systems Concepts (RASC) Exploration Mission Synergy Assessments," submitted by Patrick A. Troutman, \$3.9 million

■ "Tool Development for Abort Scenario Analysis and Failure Mode Mitigation," submitted by Mark Schoenenberger, \$7.9 million.

A list of all the winning proposals is available at: <http://exploration.nasa.gov/hrt_icp_results_syn_rev2.pdf>.

Bridges Promotes NASA Values At Breakfasts

By **JIM ROBERTS**
Researcher News editor

Langley Research Center Director Roy D. Bridges Jr. hosted "NASA Family Breakfasts" on July 19 and Aug. 2 in the center cafeteria.

The breakfast took the format of an informal senior staff meeting. "A lot of this is just getting to know each other better, like a family," Bridges said.

The theme for the breakfast was "Walk The Talk." Invited guests were encouraged to bring an employee who exemplifies one or more of NASA's values: Safety, Family, Excellence and Integrity.

"The idea behind this was to bring a guest that has been demonstrating behaviors that we think are representative of NASA family values," Bridges said. "In order to have a values-

based culture, we all have to share values. We have to understand what behaviors are consistent with those values."

Pat Haney of Lockheed Martin brought Vernon Dyke of Lockheed Martin and praised him for his work as a safety officer in the Airborne Systems Competency.

Mark Saunders, director of the Space Access and Exploration Program Office, brought Lisa Simonsen of the Exploration Programs Office and praised her for her family values in building relationships with Marshall Space Flight Center.

Stephen Jurczyk, director of the Systems Engineering Competency, brought Juan Cruz of the Spacecraft and Sensors Branch and praised his excellent

Continued on Page 4



Wilson T. Lundy, director of Langley Research Center's Research Facilities Services Competency (RFSC), recognized two employees for "walking the talk" at the NASA Family Breakfast on Aug. 2: Skip Schroeder of the RFSC's Business Management Team and Dan Vairo of the NASA Engineering and Safety Center's Business Management and Support Office.

Photo by Jeff Caplan

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NASA Vision: *To improve life here, To extend life to there, To find life beyond*
NASA Mission: *To understand and protect our home planet • To explore the Universe and search for life
To inspire the next generation of explorers ... as only NASA can*

Around the Agency

NASA PARTNERS FOR SUPERCOMPUTING GOALS

NASA is working with two major Silicon Valley corporations, SGI and Intel, to dramatically increase the Agency’s supercomputing capacity to meet critical national goals. The three organizations have formed a uniquely innovative partnership in which each is contributing resources and capabilities to the joint collaboration.

As part of “Project Columbia,” NASA will integrate a cluster of 20 interconnected SGI Altix 512-processor systems, for a total of 10,240 Itanium 2 processors, to significantly increase the Agency’s capability and capacity through creation of “the Space Exploration Simulator.” The new machine will be based at Ames Research Center in the heart of California’s Silicon Valley. It will provide an estimated ten-fold increase in NASA’s current supercomputing capacity.

“NASA is excited to be working with industry in an innovative way to allow the agency to deploy a versatile capability in supercomputing,” said NASA Administrator Sean O’Keefe. “This will enable NASA to meet its immediate mission-critical requirements for return to flight, while building a strong foundation for our space exploration vision and future missions.”

NASA HQ RELEASE: 04-243

NASA APPROVES SHUTTLE TANK FITTING

NASA is moving ahead with plans to redesign a part of the Space Shuttle external fuel tank that investigators believe played a critical role in the Space Shuttle Columbia accident. The Space Shuttle program will soon begin manufacturing and installing an improved bipod fitting, which connects the external fuel tank to the Shuttle during launch.

A Critical Design Review Board of NASA managers, engineers and aerospace contractors last month approved the new design, a significant milestone in the effort to return the Shuttle to safe flight. The approval allows workers to begin incorporating the new fitting on External Tank No. 120, the tank slated for flight on the next Shuttle mission, designated STS-114.

Investigators believe that during Columbia’s launch in January 2003, insulating foam from the bipod area fell off the external tank and damaged the left wing of the Space Shuttle. The new design addresses the Columbia Accident Investigation Board recommendation to reduce the risk to the Shuttle from falling debris during liftoff. It eliminates the foam covering from the bipod fitting and replaces it with four rod-shaped heaters. The heaters will serve the same primary function as the foam, preventing ice buildup on the tank’s bipod fittings.

“This is a fix that really gets to the root of the technical problems that caused the loss of Columbia,” said Michael Kostelnik, NASA’s Deputy Associate Administrator for International Space Station and Space Shuttle Programs. “By eliminating this debris source, as well as potential debris from other areas, we are making the Shuttle a safer spacecraft.”

NASA HQ RELEASE: 04-240

Soccer League Champs



Langley Research Center’s Soccer Club recently completed summer league play. Four teams with a total of 46 players participated. Los Galacticos won the championship. Team members included: (front row, left to right) Eric Condon, Joshua Keane and Sadie Tedder; and (back row, left to right) Ghassan Taha, Duncan Fairlie, Geoff Haynes, Javier Martin-Torres (captain), Dan Stead, Mahyar Malekpour and Hiep Tran. Team member Daniel Gilman was not present for the photo. For more information, visit the Soccer Club’s web site: <<http://larc-exchange.larc.nasa.gov/lea/soccer/>>.

Photo courtesy of Christopher Lang

Retirement

Langley Research Center’s Aerospace Vehicle Systems Technology Office will host a retirement celebration for **Darrel R. Tenney** at 4 p.m. Aug. 26 in the Hampton and Langley rooms of the H.J.E. Reid Conference Center.

The cost, \$10 per person, covers gift and heavy hors d’oeuvres. Gift-only contributions are welcome and should be sent to Mail Stop 208.

Please RSVP by Aug. 20 to Sheila Boone at 864-6033 or Fran Sabo at 864-6512.

Letter to the Editor

I enjoyed 21 years of work at NASA. Thank you for sharing those years with me. It was an experience I will never forget. I counted each person I met along the way a friend and will cherish the memories of our years together.

The retirement party was the culmination of years of service and friendship. Thank you for honoring me and my fellow retirees with this event.

Special thanks to all who planned and organized the retirement party. It was well planned, and everyone seemed to be focused.

Julian R. “J.R.” Roberson

In Memoriam

John J. Ferrainolo

John Joseph Ferrainolo died on July 10 at the age of 55. Ferrainolo, a native of Homestead, Pa., was an active employee in Langley Research Center’s Library and Information Services Branch. He provided specialist reference services in the

areas of structures and materials, composites and aerospace science. He was recognized for his contributions to the Columbia accident investigation in August 2003.

Patricia Cross

Patricia Cross died on July 16 at the age of 50. Cross was an active employee in Langley Research Center’s Systems Engineering Branch.

Maud M. Gillespie

Maud Muller Gillespie died on July 21 at the age of 93. Gillespie, a native of Albany, N.Y., worked at NASA’s Wallops Flight Facility, retiring in 1981.

Louise M. Hopkins

Louise M. Hopkins died on July 26 at the age of 87. Hopkins, a native of Nahunta, N.C., worked as a lab technician at Langley Research Center for 22 years. She went on to work 12 more years as a blueprint operator at Newport News Shipyard.

Pauline H. Leftwich

Pauline Horton Leftwich died on July 16 at the age of 85. Leftwich, a native of Coleman’s Falls, worked as a secretary for NASA.

Leonard J. Pepe Jr.

Leonard J. Pepe Jr. died on July 30 at the age of 87. Pepe, a native of Newport News, worked at Newport News Shipbuilding and NASA for 30 years.

William L. Wells

William L. Wells died on July 15 at the age of 70. Wells, a native of Lafollette, Tenn., served in the U.S. Army and went on to work as a research engineer for NASA, investigating planetary entry simulation and hypersonic flight. He retired after 30 years of service.

Read the Researcher News online at <<http://researchernews.larc.nasa.gov>>.

News Researcher

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The privilege of listing announcements in this publication is restricted to the employees, contractors and retirees of the Langley Research Center. Articles must be offered without regard to race, color, religion, sex or national origin. All materials are subject to editing.

The Researcher News accepts signed letters to the editor from Langley Research Center employees, on-site contractors and retirees. Letters are limited to 250 words and will be edited only for grammar. When necessary, letters may be edited for space, but only with the author’s approval. Letter-writers are limited to one submission on a topic every six months. Questions regarding this policy should be directed to Keith Henry, managing editor, at 864-6120 or <h.k.henry@nasa.gov>.

Transformation Takes Effect

Agency Restructured Into Mission Offices On Aug. 1

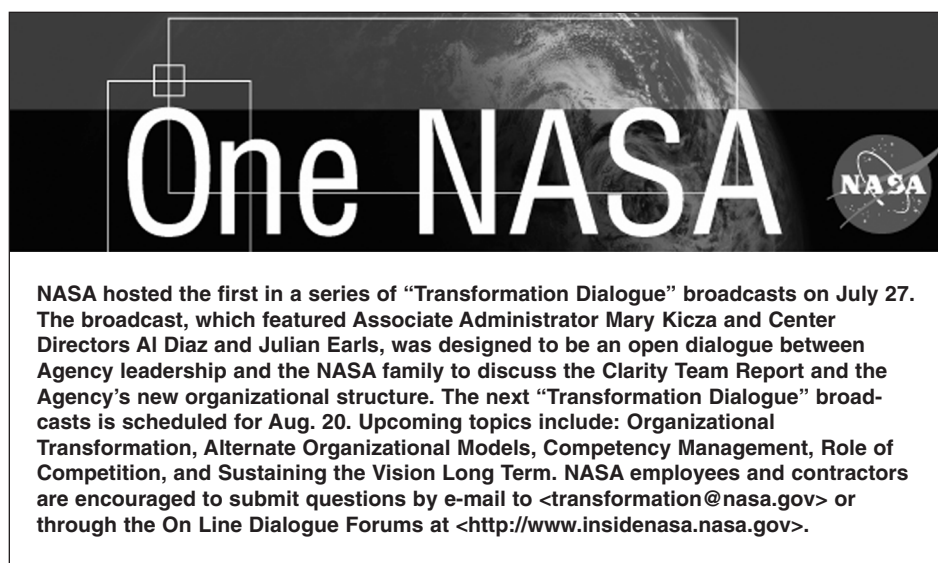
By **GLENN MAHONE**
NASA Headquarters

On Aug. 1, an unprecedented transformation of NASA's organizational structure occurred, streamlining the agency and putting it in a better position to implement the Vision for Space Exploration.

In June, the President's Commission on Implementation of U.S. Space Exploration Policy found that NASA needed to transform itself into a leaner, more focused agency.

"The Commission recognized that to make the Vision a success we needed a more integrated approach to science, management and systems and mission development," said NASA Administrator Sean O'Keefe. "Since we made this announcement in June, we've worked these past weeks to remove the 'stove pipes' and to streamline the agency in a way that will allow us to support the Vision for Exploration in a more efficient and affordable way."

This transformation fundamentally



restructures NASA's Strategic Enterprises into Mission Offices. Headquarters support functions also have been realigned to better clarify organizational roles and responsibilities.

The agency has redefined its relationships with the NASA field centers by developing clear and straightforward lines of responsibility and accountability.

Specific Mission Associate Administrators are now assigned as Headquarters Center Executives. They have oversight of field center performance in implementing agency policies and programs.

The changes that went into effect on Aug. 1 represent not only the next step in implementing the recommendations of the

President's Commission on Implementation of U.S. Space Exploration Policy, they also reflect NASA's ongoing efforts to apply the findings and recommendations of the Columbia Accident Investigation Board across the agency.

"The changes that went into effect Aug. 1 are significant, but our work isn't complete," O'Keefe said. "This transformation will be an ongoing, evolutionary process. As we identify innovative ways to do our jobs better, we'll move forward and implement those changes. This is truly an exciting time to be a part of NASA."

The agency will continue to engage other government offices, industry, academia and the international community to look for new processes, tools and technologies to help NASA successfully achieve the Vision for Space Exploration.

Additional information, including the new NASA organization chart, is available on the Internet at: <http://www.nasa.gov/formedia>.

SATS Demo Planned For June 2005

By **KATHY BARNSTORFF**
Langley Research Center

A public-private partnership working to improve aviation and make air travel accessible to more people has chosen June 2005 for a demonstration of new aviation capabilities, benefits and opportunities that are part of an improved Small Aircraft Transportation System (SATS).

NASA Associate Administrator J. Victor Lebacqz announced at the annual Experimental Aircraft Association AirVenture fly-in in Oshkosh, Wisc., that NASA, the Federal Aviation Administration (FAA) and the National Consortium for Aviation Mobility (NCAM) are planning the proof-of-concept demonstration for June 5-7, 2005.

"Our SATS team will demonstrate new technologies and procedures developed by the Small Aircraft Transportation System project in flight, in simulation,

with displays and through lectures and seminars at the Danville Regional Airport in Danville, Va.," Lebacqz said.

During the three-day event, organizers also plan to offer participants a look at the potential impacts that additional small aircraft traffic could have on the nation's skies and the business prospects that could be available for air taxis and other services interested in capitalizing on a new air transportation system that would complement existing major airports.

SATS researchers at Langley Research Center and at NCAM SATSLabs across the country are developing integrated airborne systems, cockpit displays and operating procedures for a new generation of aircraft designed to carry four to ten passengers.

These technologies could help planes safely fly into underused rural and suburban airports, including many airfields that do not have radar or air traffic control

towers. Nearly all of the people in the United States live within a 30-minute drive of one of these airports.

SATS research is focusing on four operating capabilities that may help permit people and goods to travel faster and farther, anywhere and anytime. These technologies would allow:

- higher volume operations at airports that do not have control towers or terminal radar
- pilots to land safely in low visibility conditions at minimally equipped airports
- increased single-pilot performance
- SATS aircraft to integrate seamlessly into the complex national airspace

The technologies, which have been developed to allow these capabilities, will be demonstrated at Danville, either in flight or in simulation or a combination of the two.

The city of Danville and the Virginia Department of Aviation are hosting the demonstration, but the event is possible through the combined efforts of NASA,

the FAA and NCAM, including its SATSLabs and their member companies. NASA and the SATSLabs, including the Maryland and Mid-Atlantic SATSLab; the North Carolina and Upper Great Plains SATSLab; the South East SATSLab; the Virginia SATSLab; the Michigan SATSLab; and the Indiana SATSLab, are responsible for developing the technologies that will form the centerpiece of the Danville demonstration.

For more information about the Small Aircraft Transportation System on the Internet, visit: <http://sats.nasa.gov>.

For more information about the National Consortium for Aviation Mobility on the Internet, visit: <http://www.ncam-sats.org>.

Elvia Thompson of NASA Headquarters and Ken Hespe of the National Consortium for Aviation Mobility also contributed to this story.

■ **AirVenture photo essay, Page 5.**

Langley Selected For Radiation Research Proposal

By **DOLORES BEASLEY**
NASA Headquarters

John W. Wilson of Langley Research Center is one of 19 researchers selected to conduct ground-based research in space radiation biology and space radiation-shielding materials.

Sponsored by NASA's Exploration Systems Mission Directorate, the research

will use the NASA Space Radiation Laboratory (SRL) and the Alternating Gradient Synchrotron at the Department of Energy's Brookhaven National Laboratory on Long Island, N.Y.

The SRL provides beams of radiation that are the same type and energy as found in space. They will be used for studies in radiation physics and biology in order to accurately predict and manage

radiation risk in space.

Wilson, an employee in Langley's Analytical and Computational Methods Branch, received a grant for his proposal, "Ebeam-Cure Fabrication of Polymer Fiber/Foam/Matrix Composites for Multifunctional Radiation Shielding."

His work will complement similar research already underway at Langley. NASA received 70 proposals in

September 2003 in response to this research announcement. All proposals were peer-reviewed by scientific and technical experts from academia, government and industry. The awarded grants total approximately \$13.5 million.

For a complete listing of the selected researchers, visit: <http://space.research.nasa.gov>.

Langley Provides NESC Expertise

By **MEREDITH CARR**
Langley Research Center

Four Langley Research Center employees fill critical positions in the NASA Engineering and Safety Center (NESC), which was formed in response to the Columbia accident to address engineering concerns.

Michael Gilbert, previously the head of Langley’s Systems Management Office, is now one of 10 NESC Chief Engineers, while Edward Generazio, Robert Piascik and Ivatury Raju serve as NESC Discipline Experts.

To stay informed on pertinent issues in their fields of expertise and to continue support of Center projects and institutions, NESC Chief Engineers and Discipline Experts support the NESC from their home centers.

The NESC Chief Engineer at each NASA center ensures that there is a strong link between that center and the NESC. When a concern is brought to the Chief Engineer’s attention, it is his

■ **Requests for NESC involvement — so far — have come mostly from engineering and scientific organizations, the NESC or program management. Individual employees and contractors are encouraged to contact the NESC if they have an engineering or safety concern about a NASA program. Individuals may contact the NESC through their Center NESC Chief Engineer, by email at <NESC@nasa.gov> or anonymously by writing to NESC, NASA Langley Research Center, Mail Stop 118, Hampton, VA 23681.**

responsibility to evaluate the technical decisions made by the relevant Center program office and to notify the NESC if an independent technical review is warranted or requested. NESC Chief Engineers are also voting members of the NESC Review Board.

As NESC Discipline Experts, Generazio, Piascik and Raju add technical depth and leadership to NESC program assessments. They serve as the experts in Non-destructive Evaluation, Materials and Structures, respectively. When conducting an NESC assessment, they report directly to NESC leadership to maintain the independence of NESC investigations.

NESC Discipline Experts establish Super Problem Resolution Teams for each

discipline using experts from the Agency and industry, academia and other government agencies. They also assemble catalogs of resources and facilities available for their area of study.

Additional NESC Discipline Experts include: Cynthia Null at Ames Research Center, expert for Human Factors; Frank Bauer at Goddard Space Flight Center, expert for Guidance/Navigation and Control; Robert Kichak at Goddard, expert for Power/Avionics; Steven Scott at Goddard, expert for Software; Julie Kramer-White at Johnson Space Center, expert for Mechanical Analysis; Steven Labbe at Johnson, expert for Flight Sciences; John McManamen at Johnson, expert for Mechanical Systems; Henry

Rotter at Johnson, expert for Fluids/Life Support; and George Hopson at Marshall Space Flight Center, expert for Propulsion.

NESC employs approximately 40 full time employees and has immediate access to another 200-250 “ready experts” spread throughout the country. Since its official kickoff on Nov. 1, 2003, it has received 63 requests. The NESC has most recently assisted Hubble Space Telescope and Shuttle Return-to-Flight programs. The NESC can provide programs with independent technical assessments, consultations, support and/or inspections. Twelve requests have been completed with 39 in progress or under review.

For more information about the NESC, visit: <<http://www.nesc.nasa.gov>>.

Meredith Carr, a Longwood University student, is working in Langley’s Public Affairs Office through the Langley Aerospace Research Summer Scholars (LARSS) program.

IFMP Team Makes Improvements To Web Site

Langley Research Center’s Integrated Financial Management Program (IFMP) Change Management team unveiled a new look for its web site in August.

The updated site features a more streamlined, user-friendly environment for IFMP system users to find current information. Several new features include:

- comprehensive search capability
- direct navigation to module support pages
- quick access to the IFMP Online

Quick Reference

■ easy access to IFMP online systems such as Core Financial Applications, Travel Manager, WebTADS and the Budget Formulation Business Warehouse

Many useful features from the original site remain, including:

- IFMP schedules and module updates
- meeting presentations and minutes
- technical information for Macintosh users
- Frequently Asked Questions

The IFMP team updated the site fol-

lowing an evaluation of its content and usability. The evaluation indicated two major issues: It was difficult to find specific work-related files due to the amount of content, and some content was outdated or no longer useful.

As a result, many files were updated and/or moved to locations that make them easier to find.

Regular users may experience errors when using old bookmarks. The new Search function on the site is accessible from every page and can easily be used to

search for files relating to the desired topic. Users also can go to the “Give Feedback” section to inquire about content available on the updated website.

The new web site can be found at: <<http://ifmp.larc.nasa.gov/news/index.cfm>> or accessed from the IFMP Quick Link on the LaRC intranet site.

For more information, contact Bea Crawford at <b.e.crawford@larc.nasa.gov>, or Nicole Lee at <n.s.lee@larc.nasa.gov>.

Breakfast

Continued from Page 1

work on the parachute for the Mars Exploration Rover mission.

Steve Sandford, director of the Earth and Space Science Programs Office, brought Greg Stover of the Earth and Space Science Applications Office and praised him for his integrity in seeking more funding for a Mars lidar proposal.

Other “Walk The Talk” guests at the July 19 breakfast included: Nanette Atkins of the Langley Management System Support Office, Harold Beazley of the Safety and Facility Assurance Office, Celeste Belcastro of the Assessment Technology Branch, Christine Belcastro of the Guidance and Control Branch, Maggie Bevelacqua of the Procurement Operations Branch, J.T. Brown of ACS Government Solutions Corp., Andrea Carden of Science and Technology Corp., Debbie Cooper of the Federal Aviation Administration Research and Development Field Office, Paul Demerly of ACS Government Solutions Corp., Dan Tenney of the Competency Resources and Analysis Branch, Shannon



Langley Research Center Director Roy D. Bridges Jr. (center) poses with the “Walk The Talk” guests at the July 19 NASA Family Breakfast.

Photo by Sandie Gibbs

Verstynen of the National Institute of Aerospace, and Chris Chromik, Joe Lanasa, Laurie Roberts, Nani Tosoc, Joe Twigg and Lisa Yoakum, members of the Program Development and Management Office Cost Team.

“Walk The Talk” guests at the Aug. 2 breakfast included: Percy “Bud” Bobbitt, a NASA retiree and current employee of Eagle Aeronautics, Inc.; John Connell of the Advanced Materials and Processing Branch; Susan Mercer, a Dynncorp

“In order to have a values-based culture, we all have to share values. We have to understand what behaviors are consistent with those values.”

Roy D. Bridges Jr.

Technical Services employee in the Security Management and Safeguards Office; Paresh Parikh of the Configuration Aerodynamics Branch; Skip Schroeder of the Research Facilities Services Competency’s Business Management Team; and Dan Vairo of the NASA Engineering and Safety Center’s Business Management and Support Office.

Bridges encouraged members of senior staff to acknowledge “Walk the Talk” employees at future breakfasts. For more information, contact David Miller at 864-6045 or <David.S.Miller@nasa.gov>.



Charlie Cope (left), a pilot in Langley Research Center's Flight Operations Branch, shows NASA 501, Langley's Cirrus SR-22X, to spectators at AirVenture 2004, the

annual fly-in hosted by the Experimental Aircraft Association (EAA) in Oshkosh, Wis. The Cirrus is used as a flying testbed for research.

Not Just A Job ...

An AirVenture

NASA Employees Play An Active Role At Annual Fly-In



Above: Larry Cooper, an employee in Langley's Research Hardware Validation and Verification Branch, shines the half-scale model of the ARES Mars airplane in front of the NASA exhibit at AirVenture 2004.

Left: NASA Administrator Sean O'Keefe (left) poses with actor Harrison Ford at AirVenture 2004. In addition to being an aviation enthusiast, Ford serves as chairman of Young Eagles, an EAA organization that interests young people in flying.

Photos by Kathy Barnstorff

Empowering Other Teachers

Maisha Holmes Puts Her Pre-Service Teacher Experience To Use

By **ASHLEY DOW**
Langley Research Center

Articulate and energetic, Maisha Holmes has an engaging personality that causes everyone to want to be around her. Most days, a room full of elementary school students surrounds her, eager to learn about math and science.

Holmes, a teacher at Captain John Smith Elementary School in Hampton, is a volunteer in Langley Research Center's Pre-Service Teacher Institute. Since 1995, the institute has provided college students and recent graduates seeking a career in teaching the tools necessary to develop new and exciting ways to teach math and science.

Holmes graduated from the program in 2002. Since then, she has devoted her time to helping future teachers overcome their fear of teaching math and science. As a volunteer in the Institute, Holmes offers advice to future teachers participating in the program and helps fourth-through seventh-grade students use NASA web sites to learn about math and science.

"I want to empower other teachers," Holmes said. "Too often teachers are afraid to teach math and science because they don't know creative ways to present the information. The institute helps to calm those fears. Sharing my experience demonstrates to the participants that their students can and will become excited about math and science."

For two weeks this summer, 47 future teachers from across the country attended the institute at Langley. Selected at the 2004 National Science Teacher Annual Conference, participants represent Historically Black Colleges and Universities, Tribal Colleges and Universities and Hispanic-Serving Institutions.

Teachers are taught math and science concepts using problem-based learning. This type of learning helps students to solve problems through a series of three steps: what we know, what we need to



Maisha Holmes, a teacher at Captain John Smith Elementary School in Hampton, helps a sixth-grade student navigate a NASA web site.

Photo by Ashley Dow

know, and bright ideas to reach our goal. At the end of the two weeks, groups of teachers teach a lesson in math and science to fourth-grade students from across

Hampton Roads. The lessons should be innovative and use problem-based learning.

One group of teachers created a lesson

plan entitled, "Mission Endeavor" that simulated students becoming astronauts and launching in a Space Shuttle. While "in-orbit" the students encountered a problem: Their electrical system failed. To fix the problem, the teachers gave the students two challenges: project alpha and project beta. Project alpha included a battery, wire and light bulb. With the materials, students had to create electricity. Project beta involved students solving an algebra equation to re-start their "on-orbit" computer. Both challenges presented science and math in a new way, using problem-based learning.

Holmes agrees that problem-based learning is a great way to teach math and science. She believes that fostering a desire in students to learn as much as possible is essential to developing their interest in math and science.

"In science, you always have more questions," she said. "As long as the students still have questions to ask, they have a desire to learn."

Her desire to teach others about math and science has contributed to her success as a teacher. Just two years after graduating from the University of The District of Columbia, Holmes presented workshops at the National Science Teacher Annual Conference. She used what she learned at Langley's Pre-Service Teacher Institute to help 22 out of her 25 students pass their math and science Standards of Learning tests.

Holmes credits the institute with giving her the tools to capture her students' interest in math and science.

"I have taught children and enjoyed being with them for my entire life," she said. "The institute has provided me the opportunity to enhance my teaching ability and inspire students in math and science."

Ashley Dow, a student at Longwood University, is working in Langley's Public Affairs Office through the Langley Aerospace Research Summer Scholars (LARSS) program.

OEd Stays Busy With Summer Workshops

By **KIMBERLY LAND**
Planners Collaborative

Langley Research Center's Office of Education (OEd) hosted five educator workshops this summer. More than 100 educators from 18 states participated.

The workshop season began on June 8 when Langley hosted a three-day workshop for 37 educators participating in the South Carolina Blue Ribbon Schools (SCBRS) program.

The participants toured Langley facilities, attended presentations by researchers and took part in many hands-on, inquiry-based learning activities.

SCBRS hosted a follow-up workshop

in South Carolina on July 23. Warren Edwards, an Oklahoma State University employee working in Langley's Office of Education, provided assistance for the follow-up workshop.

Langley hosted two summer workshops in support of the NASA Explorer School (NES) program. The first, held in June, was geared toward educators from the 2003 Explorer schools that had completed their first year in the program. Educators representing eight NASA centers and 13 states participated. The second workshop, held in July, was geared toward 30 educators new to the NES program.

In both workshops, educators attended

presentations, visited laboratories and participated in hands-on activities. The workshops ended with participants presenting action plans for implementing the workshop content in their schools.

Also in June, Langley and the National Institute of Aeronautics (NIA) co-hosted a workshop for 40 educators from Virginia and North Carolina.

Educators spent one week at various host universities before visiting Langley.

Center Director Roy D. Bridges Jr. welcomed the workshop participants.

Additional partners included North Carolina State University, North Carolina A&T University and the Virginia Space Grant Consortium.

Closing the summer schedule was Langley's Earth and Space Science Academy, a one-week workshop co-hosted by NASA's Office of Earth Science. Designed for local elementary school science teachers, the workshop included science content that will enhance the instruction of the Virginia Standards of Learning (SOLs).

Local colleges, school divisions and the Virginia Air and Space Center partnered with Langley to design and conduct the workshop.

Kimberly Land works for Planners Collaborative in support of Langley's Public Affairs Office.

Student Competition Winners Announced

Langley Research Center's Aerospace Vehicle Systems Technology Office recognized the winners of its annual Student Competition on July 30 at the Experimental Aircraft Association AirVenture in Oshkosh, Wis.

The competition, sponsored by NASA and the FAA, inspires students to think about the future of aeronautics and aviation. High school students were challenged to solve personal air vehicle problems; college students chose one of several vehicle categories that are part of the NASA Vehicle Systems Program.

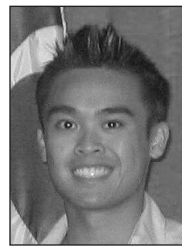
Vehicle classes for the 2004 competi-

tion included: Runway Independent Vehicles, Personal Air Vehicles, Subsonic Transports and Unmanned Air Vehicles.

The competition attracted participants from 13 states and involved hundreds of students and teachers. Winners were determined by a group of reviewers from NASA's research facilities across the country and the FAA Hughes Technical Center. Entries were rated on innovation,



Halterman



Pei

feasibility, cost analysis, base-line comparison with current technologies and thoroughness of concept.

The top teams received awards ranging from \$3,000 for college teams to \$750 for high school teams.

Awards were funded by NASA and the FAA and administered through Christopher Newport University.

Alex Halterman and Jing Pei, participants in the Langley Aerospace Research

Summer Scholars (LARSS) program, were members of the Cornell University team that won a "first tier" award in the Student Competition.

Other winners included Virginia Tech which won a "first tier" award for "Centuria," a Personal Air Vehicle, and the University of Virginia, which "second tier" award recipients for "Nerius," a Runway Independent Vehicle.

A complete list of competition winners is available at: http://avst.larc.nasa.gov/competitions_awards_univ_2004.html.

SHARP Students Enjoying Their Experiences

By **PATRICIA CASTILLO**
Langley Research Center

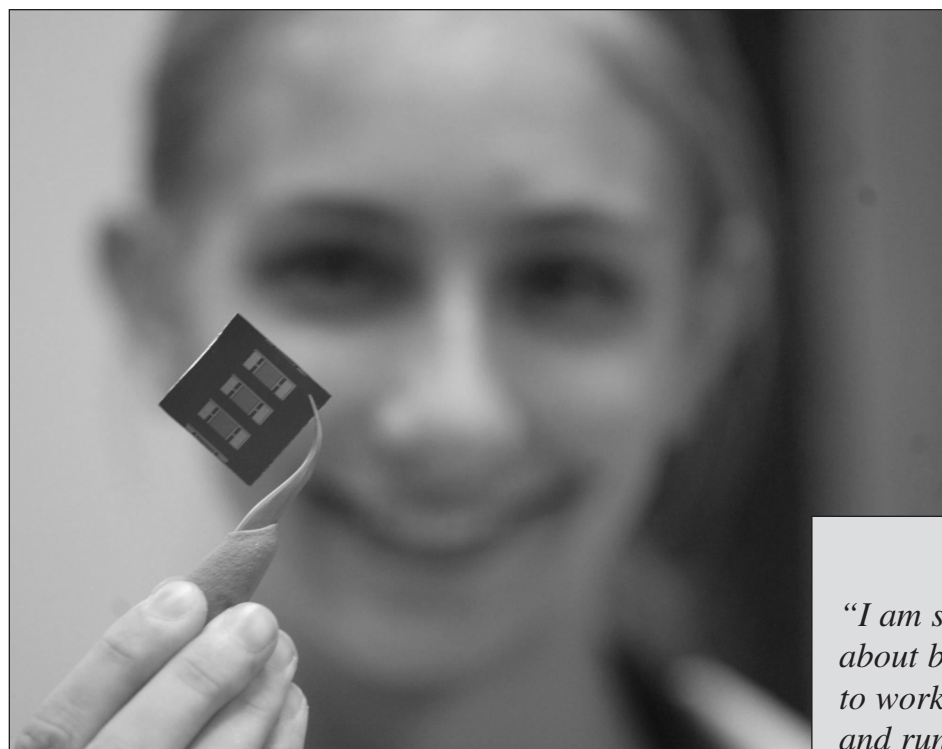
NASA Administrator Sean O'Keefe has said that one goal of NASA is "to inspire our nation's youth to be the next generation of explorers." NASA's goal to attract more youth has allowed programs such as SHARP to take place and accomplish that goal.

SHARP stands for Summer High School Apprenticeship Research Program. Created in 1980, SHARP is a paid internship designed "to encourage the career paths of pre-college students who are traditionally under-represented."

Each year, around 400 students are chosen nationwide to participate at NASA's 10 field centers. This year, Langley Research Center is hosting 28 students chosen from schools as close as Hampton High School and as far as Indian River High School in Chesapeake.

The program allows high school students to work one on one with a mentor for eight weeks. During that time, students also work on a personal project assigned to them by their mentor. They are also expected to help their mentors by assisting them with their projects.

In order to become a NASA SHARP apprentice, certain requirements must be met. Applicants must have a high grade point average and demonstrate knowledge of science and math. They must have excellent references from their math and science teachers and must complete an essay on why they want to work for NASA.



After these requirements have been met, then comes the interview process. A panel of three judges interviews the applicants and recommends participants for the program.

The SHARP apprentices do a variety of assignments. These assignments can be anything from helping with media coverage to dealing with aviation safety at the High Intensity Radiated Fields (HIRF) Lab.

The apprentices of SHARP are enjoying their experiences.

"I knew the only way to determine my areas of interests would be to actually

experience them first-hand," said Monica Woodhouse, a rising senior at Menchville High School working in the HIRF Lab. "I am learning the basics of MATLAB, a rather complex engineering software program necessary to perform my experiment."

Julia Bunch, who will attend Georgia Institute of Technology in the fall, plans to major in nuclear and radiological engineering. "I love being around smart, motivated people with a desire to learn, to

question the world around them, to really understand 'why,'" she said. "That is what I expected from SHARP, and I found it! I am testing software and setting up a network alert system in case of an emergency."

Katherine Kross, who will attend James Madison University in the fall, has previous experience working at Langley. "I spent some time at NASA Langley Research Center through a mentorship during my junior year with the New Horizons Governor's School," she said.

"I really liked the variety of projects and applications going on at the same time, so I wanted to come back and enjoy a full working day of learning, coordinating projects, and trying to keep up with everything that is going on at Langley. I am so excited about being able to work in the lab and run my own trials for the experiment."

By the end of the program, the apprentices are expected to give a presentation on their projects in front of an audience

including their parents and mentors. In the presentations, the apprentices discuss their experiences at Langley and present their project.

Patricia Castillo, a SHARP student from Denbigh High School, works in Langley's Public Affairs Office.

"I am so excited about being able to work in the lab and run my own trials for the experiment."
Katherine Kross

Grad Students Welcomed At Annual Orientation

By **JOEL H. SANDERSON**
Langley Research Center

Langley Research Center hosted the Graduate Student Research Program (GSRP) Orientation and Workshop July 20-23.

The annual event gives incoming GSRP students a chance to tour the Center, meet employees and learn what NASA has to offer.

Another major element is the opportunity for the students to discuss their research with their advisors and perform

technical presentations for the other students and guests in attendance. This year, the presentations covered research from students of nine universities with topics ranging from physics to applied experimental psychology.

Lloyd Evans, manager of the GSRP, called the event "an absolute success."

"The opportunity for students to conduct technical discussions with their advisers, coupled with being introduced to the Center's research resources and facilities, has always made this event a rewarding experience," Evans said.

The event also includes security briefings and guest speakers. This year's keynote speaker was Vincent Rausch, manager of NASA's Hyper-X Program. Other speakers included Edwin Prior, deputy director of the Office of Education; Roger Hathaway, Langley's University Affairs Officer; and Crystal Smith and Latarsha Wideman, employees in the Office of Human Resources.

The GSRP was initiated in 1980 with three goals: to cultivate research ties to the academic community; to help meet the needs of the U.S. aeronautics and

space efforts by increasing the number of highly trained scientists in the necessary fields; and to broaden the base of students pursuing advanced degrees in math, science and engineering. NASA supports approximately 300 students a year through the GSRP program. This year, Langley is hosting 47 GSRP participants, including 26 returning students.

Joel Sanderson, a student at Case Western Reserve University, is participating in the Langley Aerospace Research Summer Scholars (LARSS) program.

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FOR SALE: Wood table and four spindle-back chairs, 3x5 feet, natural finish, suitable for kitchen or informal dining room, \$200. Call 816-4469.

FOR SALE: Two M+S 205/70R14 tires with zero miles, mounted on rims and balanced, \$50 each or both for \$90. Call 565-3166.

FOR SALE: Two large metal foot-lockers, ideal for shipping or storage in flood-prone areas, \$25 each. Call 596-3897.

FOR RENT: Waterfront apartment in Willoughby section of Norfolk, 2 BR, 1BA; water, sewer, cable, Internet, A/C included. Call 270-9221.



The deadline for the Aug. 27 edition is Aug. 16. Send submissions to <j.r.roberts@larc.nasa.gov>.

Honor Awards Ceremony Aug. 13

Langley Research Center will host its annual Honor Awards Ceremony at 2 p.m. **Aug. 13** in the H.J.E. Reid Conference Center.

Presentations will be made to eight teams and 37 individuals for various honor awards. Recipients of the 2003 H.J.E. Reid Award, the Paul F. Holloway Non-Aerospace Technology Transfer Award and the Richard T. Whitcomb Aerospace Technology Transfer Award also will be recognized.

All NASA employees and contractors are invited to attend. For more information, call Karen Ridlon at 864-3194.

Soccer Club Hosts Weekly Games

Langley Research Center's Soccer Club hosts co-ed games after work every Tuesday and Thursday. All levels are welcome; players are asked to bring a white T-shirt and a dark T-shirt for ease of team identification.

For more information or to be added to the Soccer Club's e-mail list, contact Mahyar Malekpour at 864-1513 or visit the club's web site: <<http://larc-exchange.larc.nasa.gov/lea/soccer/>>.

J-Lab Hosting Final Physics Fest

Jefferson Lab will host the "Physics Fests" of the summer from 10 a.m. to noon **Aug. 25** in the CEBAF Center auditorium in Newport News.

The Physics Fest, designed for families and student groups, includes an interactive summary of the research conducted at the Jefferson Lab followed by the popular "Deep Freeze" and "Hot Stuff" presentations.

The presentation is free and open to the

Wlezien Colloquium On Aug. 18

Richard W. Wlezien, manager of NASA's Vehicle Systems Program, will present a Colloquium lecture titled



Wlezien

"Reasons to be Optimistic About Aeronautics" at 2 p.m. **Aug. 18** in Langley Research Center's the H.J.E. Reid Conference Center. No Sigma Series lecture is planned.

For more information about the lecture series, visit <<http://shemesh.larc.nasa.gov/Lectures/>> on the Internet.

public, but reservations are required. For reservations or more information, contact Stacy Ring at 269-7560 or <ring@jlab.org>.

Volunteers Needed To Stuff Bags

Langley Research Center's Public Services Office is recruiting volunteers to assemble teacher packets for upcoming state fairs. Sessions are scheduled from 9 a.m. to 3 p.m. **Sept. 15** and **16** in the Pearl Young Theater. Refreshments will be provided.

To volunteer, call Jeane Shanks at 864-3293.

Blood Drive On Sept. 15

The American Red Cross will host a blood drive on **Sept. 15** in Langley Research Center's gymnasium. Langley employees,

contractors and retirees are invited to participate. Civil servants should charge their time to "Excused Leave."

The final blood drive for 2004 will be held on **Nov. 24**.

For more information, contact Connie Small at 864-2564 or <Connie.J.Small@nasa.gov>.

Nobel Laureate To Speak At ODU

Old Dominion University will host two lectures by Nobel Prize winner Carl E. Wieman in September. Wieman will speak about "Bose-Einstein Condensation: Quantum Weirdness at the Lowest Temperatures in the Universe" at 10 a.m. **Sept. 17** in the Constant Convocation Center and about "The Circuitous Route of a Scientific Discovery" at 10 a.m. **Sept. 18** in Constant Hall. ODU and the lecture venues are located in Norfolk.

For more information, contact Amin Dharamsi at 683-4467 or <adharams@odu.edu>.

Special Activities Planned At VAM

A new exhibit titled "Lindbergh's Return to Richmond" opened in July at the Virginia Aviation Museum (VAM) and will remain on display through **Sept. 26**.

The VAM, located at Richmond International Airport, is open from 9:30 a.m. to 5 p.m. Monday through Saturday and from noon to 5 p.m. Sunday.

For more information, call 804-236-3622 or visit <<http://vam.smv.org>> on the Internet.

Center Snapshot



Before he made "one giant leap for mankind" on July 20, 1969, Neil Armstrong trained at Langley Research Center's Lunar Landing Research Facility. The inset photo was taken on the 35th anniversary of the Apollo landing at a reception for the astronauts and their families at the Smithsonian National Air and Space Museum. Shaking Armstrong's hand is Tommy Jordan, an employee in Langley's Advanced Model and Sensor Systems Branch.

Inset photo by Mark Sherrill

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